8e UGent - FirW
DOCTORAATSSYMPOSIUM

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UNIVERSITEIT GENT

FACULTEIT INGENIEURSWETENSCHAPPEN

Architecture

Applied Physics

051

Study on a next generation 10 Gb/s Long Reach DWDM Passive Optical Network

Cedric Mélange, Bart Baekelandt, Johan Bauwelinck and Xing-Zhi Qiu
Supervisor(s): Jan Vandewege

In this paper a very promising optical network is presented, which can offer high bandwidth access to the residential customer at possible low cost. The speed is increased from the current 1.25 Gb/s Gigabit Passive Optical Network to 10 Gb/s bidirectional, the reach is extended from 20 km to 100 km and the number of users served is raised from 64 up to 16384 (512 users per wavelength, 32 wavelengths). In this way the metro and access networks can be converged into a single, future-proof, cost-effective network architecture. The doctoral research performed at INTEC-design concerns the study of the optical components that are needed to enable this new technology. Optical phenomena like Amplified Spontaneous Emission noise, dispersion, optical filtering, gain compression and chirp are carefully modeled and their implications on the design of the 10 Gb/s Burst-Mode electronics are derived.